

ASYMMETRIC GROUP 8 (VIII) METALLOCENE COMPOUNDS

ABSTRACT OF THE DISCLOSURE

Asymmetric, disubstituted metallocene compounds have the general formula

5 CpMCp' where M is a metal selected from the group consisting of Ru, Os and Fe; Cp is a first substituted cyclopentadienyl or indenyl moiety that includes at least one substituent group D₁; Cp' is a second substituted cyclopentadienyl or indenyl moiety that includes at least one substituent group D₁'. D₁ is different from D₁'. D₁ is X; C_{a1}H_{b1}X_{c1}; C_{a2}H_{b2}X_{c2}(C=O)C_{a1}H_{b1}X_{c1}; or C_{a2}H_{b2}X_{c2}OC_{a1}H_{b1}X_{c1}, where X is a halogen atom or nitro group; a1 is an integer between 2 and 8; b1 is an integer between 0 and 2(a1)+1-c1; c1 is an integer between 0 and 2(a1)+1 - b1; b1 + c1 is at least 1; a2 is an integer between 0 and 8; b2 is an integer between 0 and 2(a2) + 1 - c2; and c2 is an integer between 0 and 2(a2) + 1 - b2; and D1' is X; C_{a1}H_{b1}X_{c1}; C_{a2}H_{b2}X_{c2}(C=O)C_{a1}H_{b1}X_{c1}; or C_{a2}H_{b2}X_{c2}OC_{a1}H_{b1}X_{c1}, where X is a halogen atom or nitro group; a1 is an integer between 1 and 8; b1 is an integer between 0 and 2(a1)+1-c1; c1 is an integer between 0 and 2(a1)+1 - b1; b1 + c1 is at least 1; a2 is an integer between 0 and 8; b2 is an integer between 0 and 2(a2) + 1 - c2; and c2 is an integer between 0 and 2(a2) + 1 - b2. The compounds can be employed as precursors in film deposition processes.